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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/637,662	08/11/2003	Yoshiaki Asao	241433US2S	3510
22850	7590	11/08/2004	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			NGUYEN, THINH T	
			ART UNIT	PAPER NUMBER
			2818	

DATE MAILED: 11/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/637,662

Applicant(s)

ASAO, YOSHIAKI

Examiner

Thinh T Nguyen

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[Handwritten signature]

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 25 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4,7,10,13,16,19 and 22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4,7,10,13,16,19 and 22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED OFFICE ACTION

1. Applicant's election of Claims 1,4,7,10,13,16,19,22 for prosecution of the present Application without traverse in the communication with the Office on 10/25/2004 is Acknowledged.

Specification

2. The specification has been checked to the extent necessary to determine the presence of all possible minor errors. However, the applicant cooperation is requested in correcting any errors of which the applicant may become aware in the specification.

Claim Rejections - 35 USC § 103

3. The following is a quotation of U.S.C. 103(a) which form the basis for all obviousness rejections set forth in this office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 10, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu et al. (U.S. patent 5,734,605) in view of further remark.

REGARDING CLAIM 1

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Zhu et al. (the abstract, fig 1,fig 2, fig 6,fig 7) disclose all the invention except for the division of all the bit lines into bit lines groups selected by a column selection signal. This feature, however, is considered obvious since it is become old and well known in the art as shown by the disclosure by Naji (US patent 6,111,718 column 5 lines 40-45, fig 2,fig 4).

It would have been obvious to one of ordinary skill in the art the time the invention was made to improve the device invented by Zhu et al. to come up with the invention of claim 1.

The rationale is as the following:

A person skilled in the art at the time the invention was made would have been motivated to improve a memory device so that it has high speed, low power, and high density as suggested by Naji (column 1 lines 65-67).

REGARDING CLAIM 10

Zhu et al. (fig.7) disclose a memory device that use transistors connected to the magnetoresistive elements.

The rationale why claim10 is obvious under Zhu has been discussed in the rejection of claim 1.

REGARDING CLAIM 13

Zhu et al. (fig.6) disclose a memory device that use diodes connected to the magnetoresistive elements.

The rationale why claim 13 is obvious under Zhu has been discussed in the rejection of claim 1.

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5. Claims 4, 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu et al (US patent 5,734,605) in view of Naji (US patent 6,111,781) and in further view remark.

REGARDING CLAIM 4,7

As discussed in the rejection of claim 1, the combined teachings by Zhu et al. and Naji teach all the invention except for the pitches between the bit lines or bits lines groups. These limitations, however, are considered obvious since it has been held that where all the general condition are disclosed in prior art, discovering the optimum or workable range involves only routine skill in the art.

6. Claims 16,19, 22, are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhu et al. (US patent 5,734,605) in view of Shin et al. (US patent Publication Application US 2002/0185196 A1).

REGARDING CLAIM 16

The modified disclosure by Zhu et al. disclosed all the invention including a double junction tunneling structure (fig 1) except for the use of a fixing layer. Shin et al., however, teaches the construction of a magnetoresistive that include a fixing layer (fig 1 layer 14).

It would have been obvious to one of ordinary skill in the art the time the invention was made to complement the modified teachings by Zhu et al. with the teachings by Shin et al. in order to come up with the invention of claim 16 for a purpose of avoiding error of the device as suggested by Shin et al. in paragraph [0016].

REGARDING CLAIM 19

The modified disclosure by Zhu et al. disclosed all the invention including a tunneling structure (fig 1) except for the use of a fixing layer that has ferromagnetic layer and non-magnetic layer. Shin et al. (fig 1, paragraph [0016]) , however, teach how to build a memory element that includes a fixing layer (pinning layer in Shin et al. terminology) that has a ferromagnetic layer and a non-magnetic layer.

It would have been obvious to one of ordinary skill in the art the time the invention was made to complement the modified teachings by Zhu et al. with the teachings by Shin et al. in order to come up with the inventions of claim 19 for a purpose of avoiding error of the device as suggested by Shin et al. in paragraph [0016].

REGARDING CLAIM 22

The modified disclosure by Zhu et al. disclosed all the invention including a double junction tunneling structure (fig 1) except for the use of a fixing layer that has ferromagnetic layer and non-magnetic layer. Shin et al. (fig 1, paragraph [0016]) , however, teach how to build a memory element that includes a fixing layer (pinning layer in Shin et al. terminology) that has a ferromagnetic layer and a non-magnetic layer..

It would have been obvious to one of ordinary skill in the art the time the invention was made to complement the modified teachings by Zhu et al. with the teachings by Shin et al. in order to come up with the inventions of claim 22 for a purpose of avoiding error of the device as suggested by Shin et al. in paragraph [0016].

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7. When responding to the office action, Applicants are advised to provide the examiner with the line numbers and the page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

8. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to be abandoned (see M.P.E.P. 710.02(b)).

9. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d) which papers have been placed of record in the file.

CONCLUSION

10. The prior arts made of record and not relied upon are considered pertinent to applicant disclosure: Monsma et al. (US patent 6,269,018) disclose a magnetic random access memory using current through MTJ write mechanism.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thinh T Nguyen whose telephone number is 571-272-1790.

The examiner can normally be reached on Monday-Friday 9:00am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached at 571-272-1787.

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The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Thinh T. Nguyen

Handwritten signature of Thinh T. Nguyen, consisting of the letters 'TTN' in a stylized, cursive font.

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Handwritten signature of David Nelms, a stylized cursive signature.

David Nelms
Supervisory Patent Examiner
Technology Center 2800